

a feed-roll positioned above the polishing pad, the feed-roll being configured to have a supply of the web dressing media, the feed-roll is positioned at about the first point; and

a take-up roll positioned above the polishing pad, the take-up roll being configured to collect at least a linear portion of the web dressing media, the take-up roll is positioned at about the second point; and

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could
a pressure application plate configured to be applied against an application surface of the web dressing media that is an opposite surface to the contact surface and is defined between a first position and a second position of the application surface of the web dressing media.

REMARKS

The Examiner is thanked for his careful review of this application. Claims 1, 2, 4-6, 8-14, and 16-27 are pending after entry of the present Amendment. Amendments were made to claims 1, 8, 9, 12, 17-19, and 25 to clarify the claimed invention. Claims 3, 7, and 15 were deleted and new independent claim 27 was added. These amendments do not introduce any new matter.

Rejections under 35 U.S.C. § 112, second paragraph:

The Office has rejected claims 1-11 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. It is respectfully submitted that the Applicants have amended claim 1 to define that the first position and the second position define the application surface of the web. Thus, it is respectfully requested that the 35 U.S.C. § 112, second paragraph rejections of claims 1-11 be withdrawn.

Rejections under 35 U.S.C. § 102:

The Office has rejected claims 1, 2, 11, 12, 14, and 16 under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,322,427 to Li et al. (Li). The Office has further rejected claims 1-9 and 11-24 as being anticipated by U.S. Patent No. 6,312,319 to Donohue et al. (Donohue). These rejections are respectfully traversed, as Li fails to disclose each and every element of the claimed invention, as defined in amended independent claims 1 and 12. In a like manner, Donohue fails to disclose each and every element of the claimed invention, as defined in amended independent claims 12 and 19.

Li discloses a multi-station polishing apparatus and a method for conditioning a fixed abrasive article. Li implements a corresponding conventional rotary pad conditioner to precondition/condition the fixed abrasive polishing pad of the polishing cartridge.

Among other features, Li fails to teach that the fixed abrasive polishing pad is at least partially stabilized in position when the web dressing media is being applied to the fixed abrasive polishing pad; the polishing pad conditioner includes a web handling web dressing media that includes a feed-roll and a take roll, as defined in claim 1, the feed roll is positioned above the fixed abrasive polishing pad media that is configured to have a supply of the web dressing media and that the feed-roll is positioned at about the first point; and a take-up roll positioned above the fixed abrasive polishing pad media, and the take-up roll is configured to collect at least a linear portion of the web dressing media and that the take-up roll is positioned at about the second point, and fails to disclose a pressure application plate that is configured to be applied against an application surface of the web dressing media that is an opposite surface to the contact surface, as defined in claim 1. In a like manner, Li fails to disclose providing a feed roll and take up roll or that the fixed abrasive polishing pad is at least partially stabilized in position when the web dressing media is being applied to the fixed abrasive polishing pad, as defined in claim 12. Accordingly, Li. fails to teach each and every element of independent claims 1 and 12.

Donohue discloses a polishing media magazine that includes a conditioning element having a roller, a rotating brush, and a tensioned web or belt of conditioning media. The conditioning element is in forced contact with the surface of the polishing media, forming an area of contact between the conditioning element and the polishing media, which as illustrated in Figures 4A, 11, 14, 25, 16, 17, and 18 is indented (i.e., is biased against the roller). The conditioning element is disclosed to be a cylindrical roller, a rotating brush, or a tensioned web.

It is submitted that Donohue fails to disclose each and every feature disclosed in amended independent claims 1, 12, and 19. Among other features, Donohue fails to disclose that the fixed abrasive polishing pad is at least partially stabilized in position when the web dressing media of the web handling system is being applied to the fixed abrasive polishing pad. Additionally, Donohue fails to disclose a pressure application plate that is configured to be applied against an application surface of the web dressing media that is an opposite surface to the contact surface.

Thus, amended independent claims 1 and 12 are respectfully submitted to be patentable under 35 U.S.C. § 102(e) over Li. In a like manner, dependent claims 2, 11, 14, and 16, each of which directly or indirectly depends from the respective independent claim 1 and 12 are submitted to be patentable 35 U.S.C. § 102(e) over Li for at least the reasons set forth above regarding the corresponding independent claim 1 and 12. Similarly, amended independent claims 1, 12, and 19 are respectfully submitted to be patentable under 35 U.S.C. § 102(e) over Donohue. In a like manner, dependent claims 2, 4-6, 8, 9, 11, 14, and 16, 17, and 20-24 each of which directly or indirectly depends from the respective independent claim 1, 12, and 19 are submitted to be patentable 35 U.S.C. § 102(e) over Li for at least the reasons set forth above regarding the corresponding independent claim 1 and 12. As such, the Applicants respectfully request that the § 102(e) rejections be withdrawn.

Rejections under 35 U.S.C. § 103:

The Office has rejected claims 4, 5, and 13 under U.S.C. 103(a), as being unpatentable over Li. in view of U.S. Patent No. 6, 361,411 to Chopra et al. (Chopra). In a like manner, the Office has rejected claims 26 as being unpatentable under 35 U.S.C. 103(a) over Li in view of Donohue. The Applicants respectfully traverse the Office's rejections and submit that independent claims 1 and 12, as amended, and independent claim 26 are patentable over the cited references, as none of the cited references would have suggested the claimed invention to one of ordinary skill in the art.

Citing to Li, the Office asserts that Li meets all the limitations of claims 1 and 12, except for disclosing the controlling of the applied pressure, i.e., stabilizer. The Office further asserts that it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use a stabilizer as it was known in the art to control the pressure applied to the pad so as to enhance the dressing operation.

This assertion is respectfully traversed, as Li in view of Chopra does not meet all the limitations of the claimed invention, as defined in amended independent claims 1 and 12. Chopra teaches a CMP apparatus that includes a downstream device for conditioning a web-shaped polishing pad. The CMP apparatus of Chopra includes a fixed table 192 having a surface 194 for slidably supporting the back surface of the web-shaped pad.

The combination of Li and Chopra does not disclose, teach, or suggest using a web dressing media to dress the fixed abrasive polishing pad, a feed roll to supply web dressing media, a take up roll to collect web dressing media. In fact, Li teaches using the conventional

rotary conditioning apparatuses (see Figure 3). That is, the conditioner of Li is not a web and does not include a web dressing media rather, it is a conditioning disc. However, it is the polishing pad of Li that is a belt-type or a sheet of fixed abrasive polishing pad that is disclosed in one embodiment to be in the form of a web. Furthermore, the combination of Li in view of Chopra do not teach, disclose, or suggest that the fixed abrasive polishing pad be at least partially stabilized in position when the web dressing media is being applied to the fixed abrasive polishing pad. In fact, as shown in Figure 2 of Chopra, the polishing pad is indented by the conditioner at the point of contact. Thus, the claimed invention, as defined in amended claims 1 and 12, are patentable over Li in view of Chopra.

In a like manner, independent claim 26 is directed toward a polishing pad conditioner for use in a chemical mechanical polishing (CMP) apparatus. Among other features, claim 26 defines that the web dressing media and the pressure application plate are enclosed in a housing configured to rotate. It is submitted that none of the cited art of record discuss implementing a conditioning web media defined in a rotating housing. The housing cited by the Office in Figure 18 is a vacuum plenum positioned so as to contact the polishing media such that the vacuum plenum and the polishing media form a vacuum chamber at the time vacuum is applied. The portion of the polishing media in contact with the vacuum plenum is biased against the conditioning roller.

Accordingly, in contrast to the Office's assertion, it is respectfully submitted that the combination of Li and Donahue would not have arrived at a rotating web handling dressing media enclosed in a housing that rotates. Notably, Donahue does not disclose or suggest rotating the vacuum plenum. Furthermore, in Donahue, the roller is an elongated roller that extends the entire width of the polishing pad, as such, the conditioner in Donahue must be significantly modified to accommodate the rotation of the roller and the vacuum plenum. However, such modifications have not been disclosed or suggested. Thus, the claimed invention, as defined in independent claim 26 is patentable under 35 U.S.C. § 103(a) over Li in view of Donahue.

New independent claim 27 is patentable over the cited art of record as among other features, independent claim 27 defines a polishing pad conditioner for use in a chemical mechanical polishing (CMP) apparatus that includes a polishing pad and a web handling system that includes a web dressing media, a feed roller and a take up roller, and a pressure application plate. It is respectfully submitted the claimed invention, as defined in claim 27, is patentable over the cited art of record.

Therefore, it is respectfully submitted that independent claims 1 and 12 are patentable under 35 U.S.C. § 103(a) over Li. in view of Chopra. In a like manner, dependent claim 4, 5, and 13 which incorporate each and every element of the respective independent claim 1 and 12 are patentable under 35 U.S.C. § 103(a) over Li in view of Chopra for at least the same reasons discussed above.

Indication of Allowability:

The Applicants acknowledge the Office's comment that dependent claim 10 would be allowable if rewritten to overcome the rejections under 35 U.S.C. 112, Second paragraph and to include all of the limitations of the base claim and any intervening claims. Accordingly, claim 10 has been re-written in independent form, independent claim 25, that includes all of the limitations of the base claim and the intervening claims, and complies with requirements of 35 U.S.C. 112, Second paragraph. Accordingly, it is submitted that claim 25, which defines another embodiment of several embodiments defined in the subject application, is in a condition for allowance.

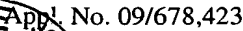
In view of the foregoing, the Applicants respectfully submit that all of the pending claims are in condition for allowance. Accordingly, a Notice of Allowance is respectfully requested. If the Examiner has any questions concerning the present Amendment, the Examiner is kindly requested to contact the undersigned at (408) 749-6903. If any additional fees are due in connection with filing this Amendment, the Commissioner is also authorized to charge Deposit Account No. 50-0805 (Order No. LAM2P206). A duplicate copy of the transmittal is enclosed for this purpose.

Respectfully submitted,
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

For: WEB-STYLE CONDITIONING SYSTEM
AND METHODS FOR IMPLEMENTING THE
SAME

Kay Harlow

Attorney Docket No. LAM2P206

a take-up roll positioned above the fixed abrasive polishing pad media, the take-up roll being configured to collect at least a linear portion of the web dressing media, the take-up roll is positioned at about the second point; and

a pressure application plate configured to be applied against an application surface of the web dressing media that is an opposite surface to the contact surface and is defined between a first position and a second position **of the application surface of the web dressing media.**

8. (Amended) A polishing pad conditioner for use in a chemical mechanical polishing (CMP) apparatus as recited in claim [7] 1, wherein the web handling system is configured to move in a movement direction between one of a first edge of the fixed abrasive polishing pad and a second edge of the fixed abrasive polishing pad, and move in a movement direction between the second edge of the fixed abrasive polishing pad to the first edge of the fixed abrasive polishing pad.

9. (Amended) A polishing pad conditioner for use in a chemical mechanical polishing (CMP) apparatus as recited in claim [7] 1, wherein the web handling system further comprises:

a housing to enclose the web handling system.

12. (Amended) A method for conditioning a polishing pad, comprising:
providing a fixed abrasive polishing pad having an abrasive polishing surface, the fixed abrasive polishing pad configured to move between a first point and a second point, the first point being separate from the second point;

providing a web dressing media having a contact surface, the contact surface of the web dressing media being defined above the abrasive polishing surface of the fixed abrasive polishing pad; [and]

providing a feed-roll configured to have a supply of the web dressing media;
providing a take-up roll configured to collect at least a linear portion of the web dressing media;

feeding the web dressing media from the feed-roll to the take-up roll; and

applying the contact surface of the web dressing media to the abrasive polishing surface of the fixed abrasive polishing pad **while the fixed abrasive polishing pad is at least partially stabilized in position, the applying configured to** dress the abrasive polishing surface of the fixed abrasive polishing pad

17. (Amended) A method for conditioning a polishing pad as recited in claim [15] 12, further comprising:

dressing the abrasive polishing surface of the fixed abrasive polishing pad by moving across the abrasive polishing surface of the fixed abrasive polishing pad in a movement direction between one of a first edge of the fixed abrasive polishing pad and a second edge of the fixed abrasive polishing pad, and a movement direction between the second edge of the fixed abrasive polishing pad and the first edge of the fixed abrasive polishing pad.

18. (Amended) A method for conditioning a polishing pad as recited in claim [15] 12, further comprising:

dressing the abrasive polishing surface of the fixed abrasive polishing pad by moving across the abrasive polishing surface of the fixed abrasive polishing pad in a movement direction between one of a center of the fixed abrasive polishing pad and an edge of the fixed abrasive polishing pad, and movement direction between the center of the fixed abrasive polishing pad and the edge of the fixed abrasive polishing pad.

19. (Amended) A system for conditioning a pad, comprising:

a pad conditioning media;

a feed-roll containing a supply of the pad conditioning media;

a take-up roll for receiving an end of the pad conditioning media; and

a pressure application member defined between the feed-roll and the take-up roll, the pressure application member being designed to apply pressure onto the pad conditioning media as the pad conditioning media is applied against the pad to cause a conditioning of a surface of the pad, **the pad being at least partially stabilized in position when the pad conditioning media is being applied to the pad.**

25. (Amended) A polishing pad conditioner for use in a chemical mechanical polishing (CMP) apparatus, comprising:

a fixed abrasive polishing pad having an abrasive polishing surface;

a web dressing media having a contact surface defined between a first point and a second point, the first point being separate from the second point, wherein the web dressing media is configured to be positioned over the fixed abrasive polishing pad such that the contact surface of the web dressing media is configured to be applied to the abrasive polishing surface of the fixed abrasive polishing pad;

a pressure application plate configured to be applied against an application surface of the web dressing media that is an opposite surface to the contact surface and is defined between a first position and a second position of the application surface of the web dressing media;

a feed-roll positioned above the fixed abrasive polishing pad media, the feed-roll being configured to have a supply of the web dressing media, the feed-roll is positioned at about the first point; and

a take-up roll positioned above the fixed abrasive polishing pad media, the take-up roll being configured to collect at least a linear portion of the web dressing media, the take-up roll is positioned at about the second point,

wherein the dressing media, the feed-roll, and the take-up roll define a web handling system, the web handling system being enclosed in a housing configured to rotate.

27. (New) A polishing pad conditioner for use in a chemical mechanical polishing (CMP) apparatus, comprising:

a polishing pad;

a web handling system including,

a web dressing media having a contact surface defined between a first point and a second point, the first point being separate from the second point, wherein the web dressing media is configured to be positioned over the polishing pad such that the contact surface of the web dressing media is configured to be applied to a polishing

surface of the polishing pad, the polishing pad being at least partially stabilized in position when the web dressing media is applied to the polishing pad;

a feed-roll positioned above the polishing pad, the feed-roll being configured to have a supply of the web dressing media, the feed-roll is positioned at about the first point; and

a take-up roll positioned above the polishing pad, the take-up roll being configured to collect at least a linear portion of the web dressing media, the take-up roll is positioned at about the second point; and

a pressure application plate configured to be applied against an application surface of the web dressing media that is an opposite surface to the contact surface and is defined between a first position and a second position of the application surface of the web dressing media.